

The third field character will be prominent in many individuals observed closely, but it may not be conspicuous in some individuals in winter plumage. Prater *et al.* (1977) indicate that some variation in plumage occurs with the Broad-billed Sandpiper. The subspecies most likely to visit Australia is *L. f. sibirica* and this is slightly paler and greyer than the nominate subspecies *L. f. falcinellus*, which occurs at least as far east as India.

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#### NOTES ON THE DISTRIBUTION AND ECOLOGY OF THE GREEN-WINGED PIGEON *CHALCOPHAPS INDICA* (LINNAEUS) IN WESTERN AUSTRALIA, WITH COMMENTS ON SUBSPECIATION IN THE AUSTRALIAN REGION.

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#### ABSTRACT

Data on distribution, abundance, habitat, food, breeding and colour of soft parts are given for the Western Australian population. Four subspecies are recognised within the Australian region: *C. i. timorensis* Bonaparte of the Lesser Sunda Islands, *C. i. longirostris* Gould of the far north of Western Australia and of the Northern Territory (including Melville Island), *C. i. chrysochlora* (Wagler) of eastern Australia, eastern New Guinea, New Caledonia, Norfolk Island and Lord Howe Island, and *C. i. sandwichensis* Ramsay of the New Hebrides and Loyalty Islands.

#### INTRODUCTION

The Green-winged Pigeon is widespread and moderately common in eastern Australia and the Northern Territory. In Western Australia it is scarce, and restricted to north-west Kimberley. It was first recorded in Kimberley in 1969 when a specimen was sent to the Western Australian Museum from 22 km south-west of Kalumburu (Storr 1969). Between 1970 and 1978 the Western Australian Museum, often in association with the Department of Fisheries and Wildlife, carried out extensive fieldwork in the Kimberley, and much of the data presented here resulted from these surveys. Most texts on Australian birds give an erroneous distribution for the Green-winged Pigeon in Western Australia and little has been published on the variation in sexual dimorphism within the Australian populations.

#### DISTRIBUTION

Storr (1980) gives the distribution in Kimberley as the 'north-western subhumid zone from Mitchell Plateau southwest to the Prince Regent River; also continental islands (South West Osborne, South Maret, Boongaree, Coronation, Augustus); vagrant to the lower King Edward River and Carson Escarpment.' More recently Mr G. Harold and Mr A. Chapman observed a single bird at Mount Daghish near Walcott Inlet, which extended the range south-west by 100 km (Figs. 1 & 2).

#### Status

Generally scarce, occurring in ones and two's, but in some areas such as parts of the Prince Regent River, it is moderately common and occurring in flocks of up to 12.

#### Ecology

The Green-winged Pigeon favours semi-deciduous vine forests, thickets and scrubs, dense vegetation along water-courses, and evergreen thickets of *Ficus* at the foot of cliffs and in gullies. In the Kimberley the semi-deciduous vine forests are best developed in the subhumid north-west sector, where mean annual rainfall exceeds 1200 mm. These forests range in size from 1 ha to about 30 ha, and are irregular in height, with a closed canopy about 3-10 m above the ground and tall emergents (mostly deciduous) rising to 15 m. The emergents include *Bombax ceiba*, *Brachychiton paradoxum*, *Albizia lebbek*



**Figure 1.** Map of Australia, showing the distribution of *Chalcophaps indica chrysochlora* and *Chalcophaps indica longirostris*.



**Figure 2.** Distribution of *Chalcophaps indica* in Kimberley, Western Australia.

and *Terminalia* spp., and the lower levels consist of slender trees and shrubs including *Celtis philippensis*, *Zizyphus quadrilocularis*, *Diospyros nitens*, *Vitex glabrata*, *Ficus* spp., *Terminalia* spp., and vines. A feature of these forests and scrubs is the large number of plants which produce succulent fruits.

The Green-winged Pigeon prefers the edges of the vine forests and is often seen feeding on fallen fruits and seeds on the forest floor. This pigeon is one of the few birds that takes advantage of fallen fruit in Kimberley vine forests. Although primarily a ground feeder, it will sometimes take fruit that is within easy reach of firm perches in trees. Occasionally they feed or drink well away from cover along creek beds or in small clearings. When flushed, however, they quickly seek shelter in dense vegetation. The flight is swift with

continuous wing beats, the bird keeping low and swerving around trees and shrubs.

The crops of four Kimberley specimens contained warty bulbils of *Dioscorea bulbifera*, wild grapes, leguminous seeds and small fruits including those of *Mimusops elengi*.

#### Breeding

No nest has been found in this State and the only breeding data come from a male and female collected on 26 January and 13 February 1973 respectively at Mitchell Plateau. The female weighed 140 g and had a well-developed ovary (largest follicle 6 x 5 mm) and a highly convoluted oviduct. The male weighed 172 g and had enlarged testes. It appears that these birds had recently bred.

#### Unfeathered parts

Kimberley birds have the bill red (3 specimens), orange (1), maroon (1); the iris dark brown; the orbital ring red; the legs purplish brown; and the mouth pink.

### SUBSPECIATION IN THE AUSTRALIAN REGION

In order to determine the taxonomic status of the Western Australian population it has been necessary to study specimens from other parts of Australia, Timor, New Guinea and the New Hebrides. Fifty-five Green-winged Pigeons held in the Western Australian Museum, British Museum and Australian National Wildlife Collection were examined. Measurements were taken as follows: length of chord of flattened wing, length of tail (along a central rectrix), length of tarsus and length of entire culmen.

In its huge range from India through South-East Asia eastward to New Guinea, Australia, New Caledonia and the New Hebrides, the Green-winged Pigeon has undergone considerable geographic variation, Peters (1937) recognised ten subspecies. In Australia there are three isolated populations; one in Victoria, New South Wales and Queensland; another in the Northern Territory; and a third in Kimberley, Western Australia (Fig. 1). The Northern Territory population is separated from eastern Australian birds by the dry unsuitable country around the Gulf of Carpentaria (Storr 1973 & 1977) and from the Kimberley population by the dry country to the south of Cambridge Gulf (Fig. 1).

There is strong sexual dimorphism in eastern Australian birds. The adult male has the head and mantle purplish-brown (slightly darker or more purplish on the nape), back and wings emerald-green tinged with bronze; shoulder patch white; lower back black crossed by two dark grey bars; rump black; tail dark brownish-black; throat and breast light purplish-brown; rest of underparts light brown; under tail coverts brownish-black. The adult female differs in having the head and mantle reddish-brown or chestnut-brown, shoulder patch grey, bars on the lower back light greyish-brown, rump brown, tail brown and breast light brown.

New Guinea females are similar to Queensland and New South Wales females. The adult males differing slightly from Queensland males in having a little more metallic gloss or bronze on the wings and back.

Northern Territory birds show only slight sexual dimorphism. The adult male has the head mantle and breast purplish-brown; lower back (between the two pale grey bars) black tinged with bronze; rump dark bluish-grey; tail black. The adult female differs in having the head and mantle brownish-purple; lower back (between two pale grey bars) dull black; rump brownish; tail dark brown; and breast pale brownish-grey. Both male and female have a white shoulder patch.

There is no sexual dimorphism in north-west Kimberley birds. Both male and female have the mantle and breast purplish-brown, a white shoulder patch, blackish tail, and the underparts light brown suffused with purple. Two females from the Drysdale River (at the eastern limit of the Kimberley population) have a slight brownish tinge on the tail, and in this respect are similar to Northern Territory females.

Timor specimens differ from Kimberley and Northern Territory birds in having the nape, centre of mantle and upper back bluish-grey. In this character they are intermediate between the Australian and Oriental forms, the latter having whitish or grey crowns and hind necks. Goodwin (1974) noted that Northern Territory females have the shoulder patch white tinged with grey, nearly as conspicuous as that of the male. He also mentions that in this character the females resemble those of *Chalcophaps indica timorensis* Bonaparte of the

Table 1. Showing measurements (mm) of *Chalcophaps indica* in the Australian region.

Subspecies	Locality	No.	Wing	Tail	Tarsus	Culmen (ventre)	Weight
<i>chrysochlora</i>	New Guinea, Queensland and New South Wales	♂ 5	145-156 (148)	87-98 (92)	24-27 (25)	22.0-23.5 (22.7)	130-154 (145)
		♀ 6	142-152 (147)	81-99 (89)	23-26 (24)	21.5-24.0 (22.8)	120-145 (135)
<i>longirostris</i>	Northern Territory	♂ 20	151-162 (158)	85-100 (93)	25-27 (26)	24.0-26.5 (25.4)	140-186 (162)
		♀ 7	149-153 (152)	85-91 (88)	23-28 (26)	23.5-26.5 (24.7)	130-167 (151)
<i>longirostris</i>	Kimberley	♂ 3	153-158 (156)	88-91 (89)	24-26 (25)	25.0-26.0 (25.3)	145, 172
		♀ 4	145-155 (151)	82-92 (86)	20-24 (23)	24.0-26.0 (25.0)	140-156 (145)
<i>timorensis</i>	Timor	♂ 1	150	91	26	23.5	
		♀ 1	152	76	26	25.5	
		o 3	152-160 (155)	80-89 (84)	25-27 (26)	22.5, 24.0	
<i>sandwichensis</i>	Santo, New Hebrides	♂ 1	140	90	25	23.0	
		♀ 1	136	81	25	23.0	

## Lesser Sunda Islands.

Two birds (a male and female) in the Western Australian Museum from Santo in the New Hebrides are generally similar in colour to birds from eastern Australia. They are slightly smaller (Table 1) and have the green on the wings and back deep pure green with little bronze.

### SUBSPECIES RECOGNISED

Condon (1975) recognised three subspecies in Australia: *Chalcophaps indica chrysochlora* from northern Queensland south of the Cape York Peninsula, New South Wales, Victoria and Lord Howe Island; *C. i. longirostris* from Cape York Peninsula Queensland, west to Groote Eylandt, Port Bradshaw and Port Keats in the Northern Territory, the Kimberley Western Australia, and southern New Guinea and islands; and *C. i. melvillensis* Zietz from Melville Island, Northern Territory. This treatment was rather peculiar considering that Peters (1961) had included Cape York Peninsula and New Guinea birds with *C. i. chrysochlora* and Melville Island birds with *C. i. longirostris*. Peters also queried the validity of *longirostris*, however my study has shown that the two Australian forms *C. i. chrysochlora* and *C. i. longirostris* are geographical isolates and differ in colour pattern and size. Frith (1982) came to similar conclusions and recognised both *C. i. chrysochlora* and *C. i. longirostris* in Australia.

Green-winged Pigeons from New Guinea, New Caledonia and the New Hebrides differ only slightly from eastern Australian birds so it appears that these areas have only recently been colonised. Mayr (1945) included birds from New Caledonia in *C. i. chrysochlora* and those from the Loyalty Islands, New Hebrides and Santa Cruz group in *C. i. sandwichensis*.

In summary the following nomenclature is adopted: *Chalcophaps indica chrysochlora* (Wagler); *Chalcophaps indica longirostris* Gould (including *C. i. melvillensis* Zietz); *Chalcophaps indica timorensis* Bonaparte; and *Chalcophaps indica sandwichensis* Ramsay. Table 1 lists these subspecies, their locality and measurements.

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### NEW RECORDS OF REPTILES ON DIRK HARTOG ISLAND, WESTERN AUSTRALIA

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The intermediate section of the Western Australian Naturalists Club visited Dirk Hartog Island (Lat: 26°S, Long: 113°E) during May 1982 and January 1984. During these visits the amateur herpetologists of the group recorded 28